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ABSTRACT

This document summarizes a report on the implementation and impact of instructional strategies to improve students' comprehension skills at three diverse urban secondary schools. While activities and characteristics varied, educators at all three locations were implementing local variations of a school-improvement approach based on the use of the Degrees of Reading Power (DRP) approach intended to help teachers acquire and use comprehension-improvement strategies in the classroom. Following an introduction, the first section describes the program at the ninth-grade School-within-a-School (SWAS) program for low-achieving students in Kansas City, Missouri, high schools. The second section discusses the Elizabeth Barrett Browning Intermediate School 115 in the Bronx, New York (grades 6-8), while the third section deals with Apopka High School (grades 9-12) in the Orange County Public Schools in the Orlando, Florida, metropolitan area. The final section contains discussion and conclusions. It is noted that at all three schools, gains appear to have been made with respect to students' reading comprehension performance on the DRP test; and that emphasis in improvement efforts included substantial staff development, activities to motivate students, and utilization with local variations of an approach the College Board developed to help teachers acquire and implement instructional strategies for enhancing students' comprehension. A glossary of strategies is appended. (SR)

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SUMMARY

EFFECTIVE IMPLEMENTATION OF A COMPREHENSION-IMPROVEMENT APPROACH IN SECONDARY SCHOOLS

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INTRODUCTION

This study is concerned with the implementation and impact of instructional strategies to improve students' comprehension skills at three diverse secondary-school locations: the ninth-grade School-within-a-school program for previously low-achieving students at senior high schools in the Kansas City (MO) School District (Chapter I), Intermediate School 115 (IS 115) in an inner-city neighborhood in the Bronx borough of New York City (Chapter II), and Apopka High School in the Orange County Public Schools in the Orlando (FL) Metropolitan Area (Chapter III).

All three locations were selected because data were available indicating that their students had been making impressive progress with respect to performance on a functional measure of reading comprehension-the Degrees of Reading Power (DRP) test developed by Touchstone Applied Science Associates in cooperation with the College Board and New York State Education Department. In addition, educators at all three locations were implementing local variations of a school-improvement approach based on use of the DRP which can help teachers acquire and use comprehension-improvement strategies in the classroom. While our descriptions of recent and current developments at the three locations included in the study will identify other activities and characteristics which help account for their success in improving students' comprehension, the DRP approach has provided a central unifying framework for enhancing school effectiveness at each location.

The DRP approach in its broadest outlines is based on a three-step set of components which have been briefly summarized (Koslin, Koslin, Zeno, and Ivens, 1989:1) as follows:

1. Administer the DRP in order to "measure students' ability to comprehend English prose".

2. Analyze the difficulty-level (i.e., "readability") of instructional materials.

3. Provide instructional materials and support services to help teachers acquire and use instructional strategies for improving students' comprehension.

The DRP Test

Developers of the Degrees of Reading Power test have described it as measuring "what might be called minimally inferential comprehension-a necessary though not sufficient, prerequisite to other higher order cognitive abilities. In other words, [the] Primary and Standard DRP test are single-objective tests measuring how well students understand the surface meaning of what they read" (Koslin, Zeno, and Koslin, 1989:1). The teachers' manual for the DRP cites the following characteristics as constituting "properties which distinguish" the DRP from other tests:

1. DRP test items are designed so that the paragraph or passage in which they are embedded must be read and understood in order for

the student to answer correctly....when the meaning of the paragraph is taken into account, only one response is plausible.

2. All of the content information that is needed to select the correct response is contained within the DRP paragraph or passage. No prior familiarity with the subject matter is required to answer the embedded items correctly....

3. Regardless of the difficulty of the prose paragraph or passage, all response options are common words....[thus] failure to respond correctly...can be attributed unambiguously to a failure to comprehend the text in which they appear.

4. DRP paragraphs and passages are designed to reduce the likelihood that guessing strategies, associative processes, and other nonreading activities can be used to respond to items correctly....

5. Item difficulty is linked to text difficulty. The student should be able to respond correctly to most of the items in the text up to the point at which the student cannot understand...well enough to decide which word is correct (Koslin, Zeno, and Koslin, 1989:4).

Developers of the DRP also have cited (Ivens and Koslin, 1989:4) additional "important features of the Primary and Standard DRP tests" as follows: 1) "they are untimed; 2) the paragraphs and passages form a linearly ordered scale, i.e., all paragraphs and passages, from the easiest to the hardest, measure the same construct of reading; 3) the results can be interpreted in terms of what students can read; and 4) the tests are particularly sensitive to the assessment of growth in reading across grades". Furthermore, there is "no evidence that teachers can circumvent successfully the instructional process by teaching to the format" of the DRP (Ivens and Koslin, 1989:9).

It should be noted that personnel at Touchstone Applied Science Associates recently have developed an advanced version of the DRP which "extends the definition of comprehension" beyond inferential responses toward higher-order aspects of comprehension. A recent description states that the "questions in the Advanced DRP test assess the ability to choose that integration of propositions which is valid within a paragraph, between adjacent paragraphs, and between two or more non-adjacent paragraphs.... The questions can be considered 'higher order' because the correct answer depends upon the student being able to recognize which response option is properly derived from the text (Ivens and Koslin, 1989:8-9).

Students' scores on the DRP are reported on a scale ranging from 15 units to 99 units. Converted from raw scores, the scale units represent the readability of materials for which a student registers a particular probability of success. For example, a student with a raw score of 41 on Test Form E-9 receives a mid-instructional level scale score of 70 indicating that he or she can process prose at this level of difficulty/ readability (see below) with a "probability of success" of 75 percent. Similarly, this student receives an "independent level" comprehension score

of 59 indicating that he or she comprehends material at this readability level with a ninety percent probability of success (Koslin, Zeno, and Koslin, 1989:17-18).

Scale scores indicating current comprehension levels and changes in comprehension levels for a student or group of students most often are reported in terms of the mid-instructional level at which prose is being comprehended with a 75 percent probability of success. All DRP scores reported in subsequent sections of this report are for the mid-instructional level. As shown in Table INT.1., norms are available indicating the average scores obtained at a given grade level by samples of students in DRP norming studies in 1987 and 1988. As indicated in the table, Spring scores for the "average" student (at the norm mean) range from 42 at the end of the third grade to 75 at the end of the twelfth grade. Spring scores for the student at the 25th percentile range from 33 at the end of the third grade to 62 for high school seniors.

DRP Matching of Students and Texts

As mentioned above, students' DRP scores are reported in scale units which can be aligned with readability/difficulty scores for prose materials identified as being at a level of difficulty at which a given student will have a fifty percent probability (frustration level), a 75 percent probability (instructional level), or a ninety percent probability of success (independent level). (Eighty and seventy percent probability-of-success levels also are specified in DRP norming tables.) Text categorization according to these student comprehension levels has been summarized briefly by educators in the Orange County (FL) Public Schools as follows:

Frustration Level: student's ability to comprehend the text is improbable.

Instructional Level: student can understand the text with good instructional assistance in the classroom.

Independent Level: student can read the text without help.

Readability information for a particular passage or set of text passages is obtained using a formula that produces readability values generally ranging from the low thirties to the high eighties. Levels of difficulty using DRP readability values for materials typically encountered in selected real-world situations are shown in Table INT.2. This DRP measure of text difficulty is derived from the Bormuth Mean Cloze Readability Formula which is based on the length of words, the length and complexity of sentences, and the proportion of commonly used words. The DRP readability formula is available as a computer program (i.e. the MicRA→ DRP formula) which can be installed on microcomputers and uses an "abbreviated set of coding rules" that makes it relatively easy to obtain a readability estimate (i.e., value) for a passage or set of passages teachers may want to utilize in instruction (Kozlin, Zeno, and Kozlin, 1989:21). In addition, the College Board and Touchstone Associates have calculated and distributed DRP values for thousands of textbooks and trade books that are used frequently in U.S. schools. Since teachers then have information denoting

Table INT.1

Average DRP Scores for 1987-88 Norms Samples*

Grade	Mean		25th Percentile	
	Fall	Spring	Fall	Spring
3	36	42	27	33
4	45	48	38	40
5	50	54	42	46
6	57	60	49	52
7	61	63	52	54
8	65	68	55	57
9	68	69	57	59
10	70	71	59	61
11	72	74	61	62
12	74	75	62	62

* Scores shown are mid-instructional level scores reported for 1987-88 norm samples.

Source: Degrees of Reading Power Norms. Brewster, NY: Touchstone Applied Science Associates. Brewster, NY: TASA™, Inc., 1988, p.7.

TABLE TABLE INT.2

Average DRP Readability Values of Periodicals and of Documents Used in Entry-Level Positions in a Major Insurance Company

Type of Periodical	DRP Value
Professional journals	72-77
Adult general interest	62-71
Teen magazines	58-64
Children's magazines	48-57

Entry-Level Positions	DRP Value
Claims examiner	71
Administrative Assistant	70
Pension Technician	69
Mail Service coordinator	68
Premium Acceptance Clerk	64
Secretary - typist	63

Source: Lois E. Burrill, "How Well Should a High School Graduate Read?", NASSP Bulletin 71(497):61-72.

students' comprehension scores and text readability values that are measured in the same functional metric, they can proceed to improve the match between students' current comprehension capacity and the materials assigned for instruction.

The philosophy underlying matching of students' comprehension levels and text materials has been described at some length in materials published by the College Board and Touchstone Associates. According to a recent DRP publication (Koslin, Zeno, and Koslin, 1989:29-32), the

> ...structuring of what might be termed a productive learning situation depends upon many factors, not the least of which are the aims of instruction and the difficulty of the task. When the purpose of instruction is to learn from reading, or whenever teachers assume that students understand the surface meaning of the text, the material should be well within a student's ability.... However, when the purpose of instruction is learning to read, reading specialists believe that very easy prose assignments do not provide a sufficiently challenging learning task....
>
> In order to increase student ability to comprehend the surface messages in text...the materials assigned should be sufficiently difficult to require that the student expends efforts to comprehend them. At the same time, the materials must be easy enough to ensure that the student will experience success....The balance between 'challenge' and probable success is thought to be provided by materials that are beyond, but not too far beyond, the student's current comprehension ability....when materials of such relative difficulty are used, the middle-grade student both understands enough of the prose to learn from a teacher's direct instruction and has the metacognitive ability of knowing when comprehension has been achieved. However...if the difficulty of the materials greatly exceeds the ability required of the student, then instruction will flounder.

Teachers' Utilization of Comprehension-Improvement Strategies

The most extensive and far-reaching component in the DRP approach involves the introduction and dissemination throughout a school of instructional strategies to improve students' comprehension of textbooks and other prose materials used in the classroom, homework, libraries, media centers, and other educational locations and assignments.* Since virtually all teachers use prose materials selected to facilitate learning of the subject being taught, the effectiveness of instruction in nearly all classrooms depends in part on students' capacity to comprehend these materials. From this point of view, every teacher is or ought to be a teacher of comprehension in his or her subject field. Utilization of instructional strategies to help students understand what they are being asked or required to read thus is an important part of each teachers' job.

*Information regarding staff development focussed on comprehension-improvement strategies at schools using the DRP approach can be obtained from Eric Cooper, Vice President, Education Training and Telecommunications, Simon and Schuster, 250 James Street, Morristown, New Jersey, 07960. -1918, 212-373-7980.

Numerous instructional strategies have been developed to enhance students' capacity to comprehend materials used in the classroom and elsewhere.* A wide variety of such strategies which are used at the schools included in this study are described briefly in Appendix A to this report. Widespread development during the past two decades of comprehension-improvement strategies and of understanding on how to use them effectively in the classroom and throughout the school has constituted what amounts to a "revolution" in educators' capacity to enhance the comprehension abilities and performance of their students (Pearson, 1985). Many of the strategies emphasized in the Orange County (FL) Public Schools are listed in Table INT.3. An overview that delineates some of the general strategies and approaches that can improve students' comprehension has been prepared by Thomas and Julie Estes (1989) of the University of Virginia, Charlottesville and the Virginia State Department of Education, respectively. After noting that productive instructional decisionmaking can begin with matching of students and materials using the DRP technology described above, these authors recommend the following kinds of strategies for "appropriate" delivery of instruction emphasizing developement of students' comprehension (Estes and Estes, 1989:12):

> Help students access prior knowledge of a topic before they read about it. Discuss with students what they know about the topic. Survey reading materials with students before assigning reading-look at pictures, other graphics, headings and subheadings. Elicit from students what they hope and what they expect the author will tell them about the topic....
>
> Discuss with readers how they understand what they read, focusing on the interplay of the words and the meaning of text....
>
> Foster concept development by helping students construct semantic maps and feature-analysis charts....
>
> Help readers explore synonyms for words, using tools of word study such as a thesaurus and various popular dictionaries of synonyms and word origins. Help students become vocabulary sleuths, constantly searching for clues to the meaning of words....
>
> Ask readers to make substitutions in text and to consider various ways to express the same thing in what they read and what they write, exploring the relationships of words and context....
>
> Have students write summaries or paraphrases of sections of text, using their own words....
>
> Examine and discuss elements of effective style in text by discussing why authors say what they say in the way they say it.

*T. L. Harris and E. J. Cooper, Reading, Thinking, and Concept Development. New York: College Board, 1985.

INT 3.

Partial List of Comprehension-Improvement Strategies Emphasized in the Orange County (FL) Public Schools*

Prereading

1. Frayer Model
2. Graphic Organizers
3. List-Group-Label
4. Possible Sentences
5. Semantic Feature Analysis
6. Semantic Mapping
7. Anticipation Guide
8. Directed Reading-Thinking Activity
9. Prediction
10. SQ3R (Study/Questions/Read/Review/Recite)
11. Think Aloud

Study Skills

1. Graphic Organizers
   a. Cause/effect
   b. Comparison/contrast
   c. Time order
   d. Simple listing
   e. Problem/solution
   f. Bulletin board
   g. Chalkboard diagram, etc.
2. Cornell Notetaking
3. One-Sentence Summary
4. Pyramid Diagram
5. Story/Chapter Mapping
6. Framed Paragraphs

Comprehension

1. Anticipation Guide
2. Directed Reading-Thinking Activity
3. Guided Reading Procedure (GRP)
4. Prediction
5. Questions/Answer/Relationships (QAR)
6. Reciprocal Teaching
7. ReQuest
8. SQ3R (Study/Question/Read/Review/Recite)
9. Think Aloud

Vocabulary

1. Analogies
2. Cloze Procedure
3. Frayer Model
4. Graphic Organizers
5. List-Group-Label
6. Possible Sentences
7. Semantic Feature Analysis
8. Semantic Mapping

* Some other OCPS publications refer to comprehension-improvement strategies as "Content Area Reading-Learning-Thinking" Strategies and "Content Area Reading Learning" strategies.
A glossary describing each strategy is provided in Appendix A.

The DRP Approach: Changing the System

As indicated above, the DRP approach provides a technology that allows teachers to assess students' functional comprehension levels and obtain a more productive match between students' comprehension levels and instructional materials. In accordance with the emphasis placed on improving students' comprehension of materials that teachers use or assign to teach their subjects, the central instructional focus throughout a participating school is on introducing and utilizing learning strategies that can help enhance student performance with respect to comprehension.

Initiating the DRP approach represents, in effect, a decision to fundamentally change irstructional patterns at participating schools. In any enterprise, decisions may have to be made about future courses of action when outcomes fall far short of expectations. The decision most often followed is to attempt to fine-tune the system through minor adjustments and tinkering. The rationale for the DRP approach recognizes that minor adjustments and tinkering have not worked because such responses ignore the underlying factors which are disrupting the system and causing serious problems.

Specifically, the central problem in many schools is that a high proportion of students lack the skills to comprehend textual materials in the content areas. The DRP approach response to this problem is to focus instruction on the comprehension of textual materials rather than on the presentation of subject matter per se. Whereas teachers traditionally present, assign, and test subject matter but infrequently concern themselves with how students process instructional materials, the DRP approach focuses on process (Sherk, n.d.). By providing teachers with the capacity to assess students' comprehension, match materials with students' comprehension levels, and introduce instructional strategies for improving students' comprehension, the DRP approach attempts to confront and solve rather than make minor adjustments in response to a central underlying problem in the school. Ways in which educators at three locations have tried with some success to change instructional and organizational patterns in order to address problems involving inadequate comprehension among their students are described in the following three chapters.

I. THE NINTH-GRADE SCHOOL-WITHIN-A-SCHOOL (SWAS) PROGRAM IN THE KANSAS CITY (MO) PUBLIC SCHOOLS

The ninth-grade School-within-a-School (SWAS) program has been operating since 1983-84 at five-to-eight high schools in the Kansas City (MO) Public School District. Designed for students reading significantly below grade level, the SWAS program provides four or five academic teachers and a half-time coordinator for forty-to-one hundred students at each participating school. A full-time Resource Teacher also is assigned to provide central leadership and coordination.

Teachers in SWAS units are specially selected for their willingness and ability in working with at-risk students. Major program components include the following:

- Selection of content-area materials below students' frustrations level for independent work and slightly above their instructional level for classroom instruction.
- Emphasis on use of comprehension-improvement strategies in delivering instruction.
- Common planning periods for teachers.
- Emphasis on motivation in learning.
- Use of the Degrees of Reading Power (DRP) Test to provide ongoing assessment of student progress and program development.
- Intensive staff development, including summer training, after-school and Saturday sessions, and seminars during the regular school day.
- Emphasis on developing productive agreements and collaboration across schools and school-district levels.
- Emphasis on linking learning across subjects in order to reinforce vocabulary, concepts, and other aspects of learning.

District evaluations of the ninth-grade SWAS program have been generally positive with respect to fidelity of implementation in accordance with the program's goals and philosophy. In addition, data on students' attendance and performance on the DRP test of reading comprehension have provided encouraging indications of success. For example, attendance in 1987-88 was five percentage points higher in SWAS than in the ninth grade districtwide, and DRP gains among SWAS students averaged eight-to-eleven points between 1985 and 1987.

In the spring of 1989 we administered a questionnaire which was returned by fifteen SWAS teachers. The main part of the questionnaire asked respondents to designate the frequency with which they used thirteen comprehension-improvement strategies and the extent to which they had found these strategies to be effective (see Tables I.2 and I.3). Respondents indicated that they used most strategies at least "sometimes" and that they had found most strategies to have at least "some" effectiveness. Strategies

designated as most frequently used included Prediction, Writing/Summarizing, Structured Overview, DRA, Concept Mapping, Anticipation Guides, and PREP (Pre-reading Plan).* Strategies designated as most effective included Prediction, DRA, Concept Mapping, Structured Overview, PREP, and Writing/Summarizing. Thus six of the seven strategies designated as most frequently used also were cited as most effective. The seventh (Anticipation Guides) was tied for seventh in rankings on effectiveness. It is clear that respondents' ratings of frequency of use and effectiveness were highly correlated (r = .87).

Other conclusions from the questionnaire administered to SWAS teachers included the following:

- among fourteen teachers who responded to the question "To what extent have you been able to coordinate introduction of vocabulary, use of comprehension strategies, or similar aspects of your day-to-day instruction with instruction in other SWAS classrooms?", five selected "nearly all the time" or "most of the time", seven selected "some of the time", and three selected "once in a while" or "hardly at all".

- nine of the fifteen respondents said they had been able to make use of students' DRP scores "very often" or "often" in planning instruction.

- five of the fifteen respondents selected "very much" when asked "To what extent have you been able to match materials with DRP scores?"; seven others selected "somewhat", and three selected "not very much". Among the twelve respondents who said they had been very or somewhat successful in matching materials with students' DRP scores, all but one responded that matching had been at least "somewhat helpful" in improving learning.

- for both questions cited above regarding use of DRP scores, new SWAS teachers understandably accounted for most of the response indicating relatively little use.

- in rating the frequency with which coordination had been attained regarding a variety of programmatic aspects, respondents designated Parent Communications, Setting Behavior Standards, and Disciplinary Consequences as the most frequently-coordinated aspects, and Testing, Vocabulary, Instructional Materials and Resources, and Concepts as the least frequently-coordinated aspects. Coordination was rated as most effective with respect to Instructional Materials and Resources, Disciplinary Consequences, Vocabulary, and Concepts, and as least effective with respect to Grading Practices, Parent Involvement Activities, and Comprehension Improvement Strategies. However, all twelve aspects of coordination were rated as being at least "somewhat" effective. The paradoxical pattern wherein coordination regarding Instructional Materials and Resources and Concepts was rated as relatively effective but also relatively infrequent may indicate that insufficient time and other obstacles are hindering SWAS teachers' efforts to further enhance instructional coordination.

*A glossary of comprehension-improvement strategies is provided in Appendix A.

- respondents indicated that their students spend an average of 35 percent of classroom time in cooperative learning activities, which are heavily emphasized in SWAS planning and staff development, and that the Learning Partners approach was the cooperative activity they used most frequently and effectively.

- in rating seventeen "considerations" that "may have been most important in contributing to the success of the SWAS program", a plurality of respondents designated each consideration except "assistance from counselors in your school" as "very important" or "moderately important". Considerations cited most frequently as being very important included "small class size", "willingness of SWAS faculty to work hard", "faculty enthusiasm", "flexibility in implementing SWAS", "assistance from SWAS coordinators", "students' willingness to accept help", and "students' willingness to ask for help".

II. ELIZABETH BARRETT BROWNING INTERMEDIATE SCHOOL 115, BRONX, NEW YORK

Located in a low-income section of the Bronx, IS 115 enrolls nearly eight hundred students in grades six through eight. More than eighty percent of students are eligible for free or reduced-price lunch. The percentage of seventh graders at or above the fiftieth percentile in reading comprehension increased from 23 percent in the spring of 1988 to 41 percent in the spring of 1989. The comparable increase in the eighth grade was from 28 percent to 37 percent. Major educational improvement efforts and programs at IS 115 have included the following:

- Project Basics. Conducted by the Center for Educational Leadership (CEL), Project Basics began at nineteen intermediate and high schools in 1985-86. Each participating school establishes a leadership team of eight-to-twelve teachers and administrators, and receives help from a staff developer one day a week. The Leadership Team at IS 115 has concentrated in part on designing and conducting workshops and on developing school goals and plans to improve student achievement.

- On-site personnel providing staff-and-organizational development. Persons who have contributed directly to site-level staff-and organizational development activities at IS 115 include: one full-time Reading Resource Teacher/Staff Developer; one Project Basics Staff Developer assigned one day a week; an Assistant Principal for Language Arts; faculty members serving on the Leadership Team; numerous nationally-known consultants who have conducted workshops dealing with comprehension-improvement strategies and other educational topics; and an English teacher trained in Writing Across the Curriculum.

- Staff Development Focussed on Comprehension-Improvement Strategies. As indicated above, many of the staff-development and related activities at IS 115 have focussed on instructional strategies for improving students' comprehension. During 1988 and 1989, emphasis shifted from reliance on outside consultants to utilization of internal resources, particularly with respect to demonstration, modelling, and coaching sessions planned and carried out by classroom teachers. Much of this activity has been made possible through strong administrative leadership that facilitated faculty participation in staff development focussed on comprehension-improvement strategies.

- Salvadori Mini-School. Established in 1987-88, the Salvadori Mini-School enrolls approximately 160 at-risk seventh and eighth graders in classes with a maximum size of 22. Staff includes eight subject-area teachers with a common preparation period, two Technology teachers, an attendance facilitator, two "family workers", a guidance counselor, and a full-time director/teacher. Emphasis in curriculum is on urban planning and architecture.

- Productive Climate and Discipline. Efforts to improve climate and discipline have included utilization of consultants from the CEL, establishment of a Peer Leadership Team, participation in the Hispanic Research Center's "Hero-Heroine" program, conduct of classroom management workshops, facilitation of student-government activity,

establishment of a "captive lunch" period, student preparation and dissemination of booklets dealing with the Bronx and with cultural diversity, introduction of comprehension-improvement strategies, the mini-school, and other educational innovations intended in part to make learning more meaningful and rewarding.

- Intensive Assistance for Low Achievers. Organizational patterns and practices that help provide intensive assistance for low achievers include employment of a full-time Reading Staff Developer, six reading teachers and six paraprofessionals, maintenance of an 8:1 student-teacher ratio in classes for low readers, a seventh-grade "Gates" class for retained students, and placement of low performing sixth graders in reading classes with two teachers.

In June of 1989 we administered a questionnaire which was returned by very few IS 115 teaches. Accordingly, we re-distributed the questionnaire the following fall and obtained responses from eighteen faculty. An analysis of responses from five teachers who had responded each time indicated that the questionnaire had good reliability.

The main part of the questionnaire asked respondents to designate the frequency with they used eighteen comprehension-improvement strategies and the extent to which they had found these strategies to be effective (see Tables II.2 and II.3). Respondents (to the second questionnaire) reported that they used many of the strategies frequently, particularly Re-telling, Prediction, Mapping, Webbing, Guided Reading, Anticipation Guides, Self-generated questions, QAR, and Questions Only. Strategies designated as most effective included Journal Entries, Prediction, Questions Only, Guided Reading, and Keyword Categorization, followed closely by DRTA, Mapping, Webbing, Anticipation Guides, K-W-L, Graphic Organizers, Self-generated Questions, QAR, Three-Level Guides, and Time Lines. The correlation between respondents' designations of frequency and effectiveness was .65.

Other conclusions from the questionnaire administered to IS 115 teachers included the following:

- among seventeen teachers who responded to the question "How frequently have you been able to make use of DRP scores in planning instruction?", only five responded "very often" or "often". However, several teachers reported taking other kinds of actions to improve the students/materials match.

- among seventeen teachers who responded to the question, "To what extent have you been able to match materials and students' DRP scores", only six responded "very much" or "somewhat"; the remainder selected "not very much" or "not at all".

- among sixteen teachers who responded to the question, "When (if) you have been able to match materials and students' DRP scores, how much has matching helped improve learning?", eleven selected either "very much" or "somewhat".

- respondents indicated they had attended an average of eleven training activities dealing with comprehension development. Sixteen of seventeen who responded reported that these activities had been "very valuable" or "valuable". Respondents who perceived the training activities as "very valuable" tended to report greater frequency of use and greater perceived effectiveness regarding comprehension-improvement strategies than did respondents who rated this training as less valuable.

- there were some indications that respondents with nine or more years of experience perceived some comprehension-improvement strategies as being less effective than did respondents with eight years experience or less, but small N's combined with inconsistent patterns prevent us from drawing firm conclusions regarding this possible relationship.

Conclusions we reached regarding dissemination and utilization of comprehension-improvment strategies at IS 115 included the following:

1. Introducing a wide variety of strategies has proven to be a useful approach that allows for and facilitates professional judgement and provides scope for appropriate selection and adaptation in the classroom.

2. Many of the strategies seemed particularly appropriate and useful for improving the performance of low achievers.

3. Many of the strategies seemed particularly appropriate and useful for improving the performance of students with limited-English background and skills.

4. Many faculty at IS 115 appreciated and benefitted from the opportunity and time to acquire awareness of strategies, try them out in the classroom, and learn how to implement them over an extended time period.

5. Conducting workshops and other staff-development activities dealing with comprehension-improvement strategies over a period of years constituted a message that their utilization was becoming expected, normal practice at IS 115.

6. Many of the comprehension-improvement strategies were viewed by faculty as being highly motivating for students and as generally improving students' engagement in learning.

7. Despite the various initiatives successfully undertaken to make staff-development time and opportunities available to teachers at IS 115, implementation of comprehension-improvement strategies has been and still is significantly hampered by limitations in the time and funds available for facilitating teachers' competence in acquiring and using strategies.

III. APOPKA SENIOR HIGH SCHOOL, ORANGE COUNTY (ORLANDO)

Located in a suburban area north of Orlando in Orange County, Florida, Apopka is a comprehensive high school enrolling approximately 2500 students in grades nine through twelve. Approximately two-thirds of Apopka students are non-Hispanic white, about one-fourth are African American, and six percent are Hispanic.

Analysis of DRP scores at Apopka indicated that achievement patterns included the following:.

- for 1989 seniors, the average DRP gain from the ninth grade to the twelfth grade was 15.5 points (66.9 in the ninth grade; 82.4 in the twelfth grade).

- for 1990 seniors, the comparable average DRP achievement gain was 16.3 points (66.4 in the ninth grade; 82.7 in the twelfth grade).

- for 1991 seniors, the average achievement gain from the eighth grade to the twelfth grade was 16.8 points (63 in the eighth grade ; 79.8 in the eleventh grade).

- average gains from the eighth grade to the tenth grade during the past few years have averaged 13.2 points, representing more than four years of gain using DRP national norms.

- gains "level off" after the tenth grade, at least in part due to test ceiling effects. The overall pattern indicates that a large majority of Apopka's juniors and seniors have acquired sufficient comprehension capability to function successfully in their various classes and programs of study.

- gains in 1988-89 were smaller than in preceding years, possibly due to required overtesting of students.

- students with DRP pre-test scores below 58 had average gains of 8.3 in subsequent years. Even if some of this gain is attributed to regression to the mean, such progress for initially low readers appears to be impressive.

- ninth graders with DRP scores below 56 have gained fifteen to twenty points during the following three-to-four years, far beyond what could be reasonably attributed to regression to the mean.

- students who came from low-income families and were eligible for subsidized lunch have made gains comparable to those of other (i.e. higher-status) students.

- gains among African American students have been comparable to those among non-Hispanic white students.

Major educational improvement efforts related to improvement of students' comprehension at Apopka have included the following:

- Introduction of The Degrees of Reading Power (DRP) Program. Originally developed by the College Board, the DRP Program as implemented at Apopka and other sites in the Orange County Public Schools (OCPS) involved the following steps and components (Monahan: 1988, 1):

  1. Full-day orientation to provide awareness of how DRP test and staff-development components are designed to function.

  2. DRP testing supervised by the school-level Reading Resource Specialist (RRS, see below), using results to improve the match between students' comprehension levels and instructional materials in content-area classrooms.

  3. Periodic training sessions at which the RRS shares information on use of the test and on strategies for matching student comprehension levels and instructional materials.

  4. Calculation of DRP readability scores for instructional materials.

  5. Infusion of DRP-related topics into OCPS courses on Reading in the Content Areas.

- Organization of Classes Based Substantially on DRP Scores. To a substantial extent, students are assigned to "Advanced", "Regular", or "Developmental" classes based on their DRP comprehension levels, rather than on standardized achievement test results as was done previously. Faculty whom we interviewed indicated that emphasis on DRP scores in assigning students to classes had proved productive and beneficial because doing so helps in aligning instructional materials with student performance, and because DRP scores have proven much easier for parents, students, and teachers to understand.

- Selection of Instructional Materials Based on DRP Scores. Apopka faculty are making extensive and systematic use of DRP scores in selecting materials through: 1) utilization of College Board publications that provide readability scores on textboods and other sources; 2) scoring materials on site with an Apple IIE computer; 3) participating in a district network in which educators share readability scores; and 4) providing faculty with continuous training in how to obtain readability scores and match students and materials.

- Emphasis on Comprehension-Improvement Strategies in Instructional Evaluation and Supervision. In conjunction with systematic staff development dealing with acquisition and use by teachers of comprehension-improvement strategies (see below), supervisors at Apopka are emphasizing these strategies as a key element in lesson planning, selection of teachers for staff development, and evaluation of classroom processes and products.

- Employment of a Reading Resource Specialist (RRS). As at other Apopka intermediate and secondary schools, a full-time RRS is employed to provide leadership and assistance in designing and carrying out school

wide efforts to improve students' performance with respect to comprehension and other skills.

- Staff Development Focussed on Comprehension-Improvement Strategies. The RRS is particularly responsible for organizing and helping to deliver regular staff development dealing with comprehension-improvement strategies. As at other OCPS intermediate and secondary schools, the RRS sets aside one day a week for conduct of staff development (titled Interdisciplinary Teaming) focussed on comprehension improvement and other related goals and activities.

- Availability of District-Level Services and Networking. Assistance available from the office of the OCPS Program Consultant for Middle and Secondary Reading and from other central office personnel includes networking across schools, technical advice regarding testing, materials matching, utilization of instructional strategies, and other topics related to comprehension improvement, conduct of relevant district and regional conferences and workshops, assistance in obtaining small grants, administrator training focussed on comprehension improvement, and help in developing annual plans.

- Conduct of Classroom Action Research. Staff development at Apopka and some other OCPS schools consistently has stressed "Classroom Action Research" in which teachers collect DRP scores on their students before and after utilizing comprehension-improvement strategies. Gains are compared with other similar classes in order to help teachers and students "prove to themselves and others" that the strategies they introduce are "making a difference. As a result content area teachers assume ownership and enhance their teaching practices" (Monahan, 1987:678).

- Additional Activities and Programs Supporting Comprehension Improvement. Among a wide variety of additional activities and programs supporting improvement in students' comprehension skills are: a ninth-grade mini-school for at-risk students; provision of tutoring after school; encouragement of writing in all classes and disciplines; conduct between 1985 and 1989 of schoolwide silent reading; encouragement and use of cooperative learning approaches; limitation of English teachers' load to four classes a day with a maximum of 25 students each, together with elimination of their non-teaching "duty" responsibilities; use of certificates, Pizza Hut lunches, and other incentives to encourage recreational reading; functioning of active faculty committees dealing respectively with reading and other curriculum areas, hiring of new staff, and maintenance of high academic standards; and implementation of attendance and dress code policies, a program to award school "letters" for academic performance, a peer-counseling program, and other activities designed in part to maintain a positive school climate.

In the spring of 1989 we administered a questionnaire which was returned by 68 Apopka teachers. Twenty-one of these respondents are Language Arts, Reading, and/or English teachers, eight are Math teachers, seven (each) are Science or Industrial Arts/Technology teachers, six are Social Studies teachers, five are Business or Computer teachers, three are

Foreign Language teachers, three are Health or Physical Education teachers, three are Special Education teachers, two are Art teachers, one is an ROTC teacher, and two did not specify their teaching field.

The main part of the questionnaire asked respondents to designate the frequency with which they used 21 comprehension-improvement strategies and the extent to which they had found these strategies to be effective (see Tables III.3 and III.4). Respondents indicated that they used many of the strategies at least "sometimes" and that they had found most of these strategies to have at least "some" effectiveness. Strategies designated as most frequently used included Following Directions, Structured Overview, Prediction, Sentence Summaries, and PREP (Pre-reading Plan).* Strategies designated as most effective included Following Directions and Structured Overview, followed by Think Aloud, PREP, Prediction, Graphic Organizers, and Framed Paragraphs. Respondents' ratings of frequency and effectiveness were highly correlated ($r = .83$).

Other conclusions from the questionnaire we administered to Apopka teachers included the following:

- Teachers of Language Arts/Reading/English reported more frequent use of comprehension-improvement strategies than did other teachers (considered as a group) in our sample.

- Teachers of Language Arts/Reading/English did not differ systematically from other teachers in rating the effectiveness of comprehension-improvement strategies: both groups rated most strategies as being relatively high in effectiveness. We inferred from this pattern that teachers other than those in Language Arts/Reading/English who have been willing or able to try strategies generally have found them to be effective. Support for this inference was found in analysis indicating that among these "other" teachers, those who reported having used a given strategy "very often" or "often" almost always designated that strategy as having at least "some" effectiveness.

- when we obtained ratings from three professors of reading regarding the "potential applicability" and "the ease of applicability to content areas" of each of the 21 comprehension-improvement strategies listed in Tables III.3 and III.4, and then compared these ratings with Apopka respondents' designations regarding frequency of use and effectiveness, we found that these latter designations were very strongly related to the professors' ratings of "ease of applicability". However, only two (Prediction and Structured Overview) of the eight strategies which the professors rated as having the greatest "potential applicability" to content-area instruction were among the seven which Apopka faculty reported using most frequently or the nine they perceived as being most effective. These results suggest that insufficient time and other constraints may be limiting Apopka teachers' capacity and willingness to use strategies that are potentially most effective but also are difficult to prepare and implement, even though much has been done at Apopka to help teachers learn about and make use of comprehension-improvement strategies.

*A glossary of comprehension-improvement strategies is found in Appendix A.

- among 58 teachers who responded to the question, "To what extent have you been able to match materials and students' DRP scores?", 67 percent stated that they had been able to match materials and students at least "somewhat". This percentage contrasted with the 35 percent of IS 115 respondents who responded similarly. Apopka faculty's apparently greater success in matching materials and students may be related to the fact that Apopka is a large comprehensive high school at which considerable schoolwide emphasis has been placed on matching through use of DRP scores. By way of contrast, IS 115 is more homogeneous with respect to student performance, and more action other than use of DRP scores appears to have been undertaken to improve the match, primarily through district-level preparation and selection of materials.

- among 38 teachers who responded to the question, "When (if) you have been able to match materials and students' DRP scores, how much has matching helped improve learning?", 32 selected "very much" or "somewhat"; only six checked "hardly ever" or "somewhat". Among the 22 teachers who responded to both matching questions and said they had been able to match materials and students' DRP scores at least "somewhat", 21 responded that such matching had been at least "somewhat" helpful in improving student learning.

- analysis of teachers' responses with respect to matching by teaching field suggested that it is comparatively difficult for teachers of relatively non-verbal subjects such as math and industrial arts to match students and materials using DRP scores.

IV. DISCUSSION AND CONCLUSIONS

Preceding sections of this report described comprehension-improvement efforts and related activities and developments at three locations: ninth-grade School-within-a-School (SWAS) units for low achieving students in Kansas City (MO) high schools; Intermediate School 115 (grades 6-8) in the Bronx borough of New York City; and Apopka High School (grades 9-12) in the Orange County Public Schools in the Orlando, Florida Metropolitan Area. At all three locations, substantial gains appear to have been made with respect to students' reading comprehension performance on the Degrees of Reading Power (DRP) test. At all three locations, emphasis in improvement efforts included substantial staff development, activities to motivate students, and utilization with local variations of an approach the College Board developed to help teachers acquire and implement instructional strategies for enhancing students' comprehension.

Acquisition and Utilization of Comprehension-Improvement Strategies

First, at all three locations substantial staff-and-organizational development resources and technical assistance have been available to help participating teachers acquire and implement comprehension-improvement strategies. Among the most obvious and visible aspects of such resources and assistance are the half-time Coordinator assigned to work with four or five teachers at each SWAS unit and the full-time Resource Teacher teacher who provides help across units, the full-time Reading Resource Specialist at Apopka High School, and the full-time Reading Resource Teacher/Staff Developer and the part-time Staff Developer at Intermediate School 115.

Second, at all three locations teachers who report having used comprehension-improvement strategies in their classrooms generally perceive most strategies as having had at least some effectiveness. Evidence for this conclusion is summarized in Table IV.1, which presents the average scores obtained at each location when teachers responding to our questionnaire were asked to designate the effectiveness of each strategy emphasized at their site on a four-point scale ranging from "very" effective (1) to "hardly any" effectiveness (4). As shown in Table IV.1, most strategies received mean scores between 1 and 2, which is between "very" and "some" on our effectiveness scale.

Third, as one would expect some strategies were designated as being used relatively frequently and others were designated as being infrequently utilized. For example, data in Table IV.1 show that at Apopka High School Following Directions, Structured Overview, and Think Aloud had mean ratings close to the "very often" point on the five-point scale on which respondents designated frequency of use, while Pyramid Diagram had a mean rating close to the "hardly ever" point.

Fourth, in instances where a particular strategy was included in our questionnaires at more than one location (because local developers indicated that it had received significant attention in staff development), teachers at one location tended to provide a frequency-of-use rating

Table IV.1
Faculty Designations of Frequency of Use and Effectiveness of Comprehension-Improvement Strategies, by Location

	Frequency of Use**			Perceived Effectiveness ***		
Strategy*	Apopka	IS 115	SWAS	Apopka	IS 115	SWAS
ANTICIPATION GUIDES	3.3	2.3	2.3	2.1	2.6	2.2
CORNELL NOTE-TAKING	3.1	--	--	1.9	--	
DRA	--	--	2.5	--	--	1.7
DRTA	3.5	2.8	--	2.2	1.7	--
EVALUATIVE LISTENING	3.0	--	--	1.9	--	--
FOLLOWING DIRECTIONS	1.7	--	--	1.5	--	--
FRAMED PARAGRAPHS	3.3	--	--	1.8	--	--
FRAYER MODEL	3.4	--	--	1.9	--	--
GRAPHIC ORGANIZERS	3.1	2.6	--	1.8	1.9	--
GUIDED READING	--	2.1	--	--	1.7	--
JOURNAL ENTRIES	--	2.7	--	--	1.4	--
KEYWORD CATEGORIZATION	--	3.1	--	--	1.7	--
KWL (Know/Write/Learn)	3.3	3.5	3.2	1.9	1.9	2.2
LIST-GROUP-LABEL	3.2	--	--	2.0	--	--
PATTERN GUIDES	--	3.6	--	--	2.3	--
POSSIBLE SENTENCES	3.2	--	--	2.1	--	--
PREDICTION	2.5	1.7	1.9	1.8	1.5	1.4
PREP (Pre-reading Plan)	2.8	--	2.9	1.7	--	1.7
PYRAMID DIAGRAM	4.1	--	--	2.3	--	--
QAR	--	2.5	--	--	1.9	--
QUESTIONS ONLY	--	2.5	3.3	--	1.7	2.7
SELF-GENERATED QUESTIONS	--	2.4	--	--	1.9	--
REQUEST	--	--	3.9	--	--	3.0
RE-TELLING	--	1.6	--	--	1.6	--
SEMANTIC FEATURE	3.5	--	--	2.0	--	--
SEMANTIC, CONCEPT MAP, WEB	3.0	1.9	2.5	1.9	1.8	1.7
SENTENCE SUMMARIES	2.5	--	--	1.6	--	--
SQ3R	3.0	--	3.0	2.2	--	2.0
STORY MAP	3.3	--	3.3	2.0	--	2.0
STRIP STORY	--	3.6	--	--	2.2	--
STRUCTURED OVERVIEW	2.2	--	2.4	1.6	--	1.7
THINK ALOUD	2.2	--	--	1.7	--	--
THREE-LEVEL GUIDES	--	2.9	4.2	--	1.9	2.8
TIME LINES	--	2.9	--	--	2.0	--

* A glossary describing each strategy is provided in Appendix A.

** Very often = 1; never = 5.

*** Very = 1; hardly any = 4.

similar to that provided by teachers at the other location(s). For example, respondents at IS 115 and SWAS respondents both rated Anticipation Guides at 2.3, and mean ratings for KWL were 3.3 (Apopka), 3.5 (IS 115), and 3.2 (SWAS), respectively. However, frequency-of-use ratings for some strategies were considerably different at one location than elsewhere (e.g., DRTA), and the number of intersite comparisons in Table IV.1 is relatively small. Although the general similarities in frequency-of-use ratings across locations suggest that some strategies may be more feasible and adaptable for classroom utilization than others, much additional research is needed to determine why teachers use any given strategy frequently or infrequently.

Fifth, respondents at all three locations reported that matching materials with students' DRP scores had been helpful in improving students' learning. Among SWAS respondents, eleven of twelve who said they had been at least somewhat successful in matching materials with students' DRP scores reported that this had been at least "somewhat helpful" in improving student performance. Comparable data for IS 115 and Apopka indicated that 43 of 54 respondents exemplified this same pattern.

It should be noted, however, that wide differences appeared to exist in the extent to which teachers had been able to match materials and students' DRP scores at differing locations. On the one hand, eighty percent of SWAS respondents and 67 percent of Apopka respondents said they had been at least somewhat successful in bringing about a match, compared with only 35 percent among IS 115 respondents. Relatively less success in matching reported by the IS 115 respondents may be related to the fact that substantial matching already had been attained there through district-and school-level selection of materials and assignment of students to classes based partly on previous performance level.

Sixth, teachers at Apopka and IS 115, as well as those in the Kansas City SWAS program, appreciated the opportunity to learn about and choose among a variety of possible comprehension-improvement strategies. Based on five years of periodic observations of and discussion with SWAS teachers, and on interviews we conducted with teachers, administrators and key support staff at Apopka and IS 115, we believe that many teachers particularly welcome an approach based on the premise that there is no one strategy universally appropriate for all teachers, students, or classroom situations. When teachers receive information, training, and follow-up assistance involving a range of strategies, many are willing to try new approaches and to thoughtfully consider whether one or another approach is suited for a particular lesson and class of students. They also appreciate the implied underlying assumption that they are competent professionals who are able to select and adapt an appropriate strategy for use in their classroom.

Seventh, many teachers also benefitted from the opportunity to acquire awareness of strategies, try them out in the classroom, and learn how to implement them over an extended period of time. This generalization was articulated particularly well by an IS 115 teacher who told us that at first she "didn't feel comfortable" with certain strategies, but grew more positive after she had learned more about them, prepared appropriate materials, and discovered how they worked in her classroom.

Eighth, conducting workshops and other staff-development activities dealing with comprehension-improvement strategies over a period of years constituted a message that their utilization was becoming expected, normal practice. Expressed by several knowledgeable observers at each of the locations included in our study, this conclusion is well in line with research indicating that leaders of unusually effective schools communicate schoolwide goals and expectations through activities and goals that receive continuous attention and reiteration over a long period of time.

Exemplification of Effective Schools Characteristics

Much has been learned in recent years concerning the characteristics of schools that produce achievement higher than is usual at most other schools that enroll students of similar socioeconomic background.* The two schools in our study and the SWAS program exemplify many of the characteristics that frequently been ascribed to these unusually effective schools. Examples denoting the manifestation of several such characteristics are described briefly below.

Active/Engaged Learning. Students' active participation and engagement in learning is systematically emphasized at all three locations included in our study. For example, IS 115 has provided opportunities for publication of students' written products and has emphasized urban and Hispanic studies, while the SWAS program has sponsored academic competitions across schools.

Apopka and IS 115 both have established schools-within-a-school partly to encourage more active participation in learning, and all three locations have emphasized comprehension-improvement strategies, which have been explicitly developed as pedagogical approaches to stimulate thinking and enhance involvement in cognitive tasks. In addition, cooperative learning approaches that facilitate active engagement have been stressed systematically in the SWAS program and have received considerable emphasis at Apopka and IS 115.

Grouping of Students and Provision of Intensive Assistance for Low Achievers. Research on unusually successful schools indicates that, in one way or another, they have devised and implemented arrangements to group students effectively for instruction and to utilize staff and other organizational resources in a manner that helps students-particularly low achieving students-succeed academically. In conjunction with grouping and other aspects of organizational arrangements, unusually effective schools are known for their dedication in providing intensive special assistance for low achievers.

Grouping of students is an extremely complex issue which we will not discuss at length here; instead we will summarize commonalities in successful grouping and related organizational arrangements at the three locations in our study by calling attention to their efforts in "leveling" their enrollment to enhance instructional effectiveness. We use the term "levelling" to refer to the practice of classifying students into a few broad groupings or levels based significantly on current reading performance. Through establishment of a few broad levels based on reading

*Effective school characteristics cited in this section are described in Levine and Lezotte (1990).

performance (e.g., average and above-average readers; poor readers), schools can concentrate on providing extra support for low achievers. Levelling may be a more useful term than "homogeneous grouping", because it implies an effort to avoid overuse of homogeneous grouping and tracking, along with an emphasis on providing intensive assistance to help low achievers master skills needed to function successfully thereafter in more heterogeneous learning environments.

Levelling has been a central part of the organizational arrangements at all three locations in this study. The SWAS program is based on ninth-grade levelling that provides small class sizes and other special assistance to help low achievers for an entire year, and both Apopka and IS 115 also have school-within-a-school arrangements for students who are low achievers and/or potential dropouts. In addition, Apopka provides "developmental" classes for students selected mainly on the basis of low DRP scores, and IS 115 offers a variety of special classes for low achievers including double-staffed Chapter 1 classes, a seventh-grade "Gates" class for non-promoted students, and bilingual classes.

Organizational levelling aimed at facilitating effective instruction for low achievers also is closely related to implementation of the College Board DRP approach at intermediate schools and high schools. This approach is based partly on the supposition that learning materials should be somewhat above students' comprehension levels during classroom instruction, and below their frustration levels during independent learning assignments. The DRP provides a technology to align students and materials in order to facilitate such matching.

However, identifying and providing multiple sets of materials to allow for matching across numerous subgroups within very heterogeneous classes is a daunting and perhaps even infeasible task in many secondary schools. Grouping and levelling of students within the schools and programs described in this report have helped make it possible to provide and utilize appropriate materials for broad groupings of students, particularly low achievers. Together with district, school, and classroom-level efforts (cited in the preceding chapters) to match materials and students, effective grouping and levelling thus help account for the gains in comprehension performance that have been registered at the schools in this study.

Personal Development of Students. Several descriptions of unusually effective schools have portrayed them as placing special emphasis on facilitating students' personal and social development (e.g., Kozberg and Winegar, 1981; Levine, Levine, and Eubanks, 1984). Explicit and systematic stress on personal development seems to be particularly important in schools, such as IS 115 and several of those in the SWAS program, that enroll mostly disadvantaged students in the inner city. In line with this generalization, the SWAS program and the schools-within-a-school at Apopka and IS 115 have been organized specifically in order to provide their at-risk students with personal guidance and assistance from teachers selected for their willingness to carry out this function. In addition, IS 115 emphasizes personal development through a variety of resources and activities including two deans of students, sponsorship of a Peer

Leadership program, conduct of after-school and Saturday classes for students and their parents, and cooperation with the Hispanic Research Center.

Coordination of Instruction. Studies of unusually effective schools have described a number of different ways in which their faculties coordinate instruction across classrooms in order to enhance the performance of low achievers. As noted in Chapter 1 of this report, coordination of instruction appears to be one of the foremost activities responsible for positive outcomes in the Kansas City SWAS program, and it also has been a principal underlying motive in establishing mini-schools at Apopka and IS 115. More generally, extensive coordination of instruction is being attained at all three locations through teachers' systematic utilization of comprehension-improvement strategies, which provide a common and reinforcing thread in instruction as students move from one classroom to another.

Availability of Instructional Support Personnel. The first part of this chapter enumerated some of the ways in which considerable staff-and-organizational development resources have been made available to help teachers at the three locations described in this report. The critical importance of the persons providing this help was underscored in the high ratings SWAS teachers gave to coordinators and the Resource Teacher in assessing considerations responsible for success of the program (Chapter I), the high ratings IS 115 teachers assigned to workshops planned and/or conducted by staff development specialists working at the school (Chapter II), and the central school-improvement role performed by the Reading Resource Specialist at Apopka High School (Chapter III). In our opinion, schools which attempt to introduce and implement a schoolwide emphasis on instructional strategies to improve students' comprehension without providing an equally-high level of technical support for teachers probably will fail.

Outstanding Leadership. Functioning of outstanding leadership on the part of the principal and other persons has long been recognized as a prerequisite for substantially improving instructional effectiveness on a schoolwide basis. Key functions that have been identified as being frequently dependent on the contributions of outstanding administrators include vigorous selection and removal of teachers, provision of support for teachers, acquisition of resources for instructional improvement, and development of a coherent academic mission and positive learning climate throughout the school (Levine and Lezotte, 1990). Both of the schools (Apopka and IS 115) which we described in this report would not have made substantial progress without the outstanding leadership that was provided by their respective principals and other administrators and teachers who helped facilitate introduction and utilization of comprehension-improvement strategies over a period of three-to-five years.

Focus on Key Skills and Higher-Order Learning in Assessment and Instruction. For various reasons, effective schools research historically tended to ignore issues involving the kinds of skills which schools were emphasizing in assessing student performance and implementing instructional improvements. As a result, some schools were identified as being unusually effective even though they concentrated on providing drill and practice on

low-level skills that students memorized and regurgitated on tests of mechanical skills. Recent re-examination of two decades of effective schools research, however, indicates not only that effectiveness must be defined at least partly in terms of student performance with respect to relatively higher-order skills such as comprehension in reading and problem-solving in mathematics, but also that unusually effective schools with high performance above the second or third grade tend to focus both assessment and instructional improvement efforts on higher-order learning (Levine and Lezotte, 1990).

If the presence of a focus on key higher-order skills is used as a criterion for identifying effective schools, Apopka High School, IS 115, and the SWAS program should be viewed as exemplifying this characteristic associated with and partially responsible for unusual effectiveness. To a significant extent, this is because they have introduced and systematically implemented a schoolwide process for assessing and improving students' comprehension skills. Using the College Board DRP approach that provides an assessment of each students' functional comprehension level, attends to issues involving the match between students' DRP scores and instructional materials, and, most important, concentrates faculty effort over a multiyear period on acquiring and implementing comprehension-improvement strategies in the classroom, faculty at all three sites in this study have made considerable progress in revising and reforming instructional arrangements and methods in order to help students improve their comprehension skills and thus their capacity to function successfully in all their classes.

Given the promising results that have been reported at the schools examined in this study and in several other school districts, the College Board DRP approach has been selected as one of the primary educational-reform emphases to be supported by the recently-formed National Urban Alliance for Effective Education (NUA). Established by a number of school districts, universities, the College Board, philanthropic foundations, the Simon and Schuster School Group, and other interested agencies and organizations, NUA will be working to help school districts introduce and successfully implement the DRP approach.* Services to be provided will include assistance in planning, scheduling, and conducting appropriate staff development, auditing and assessment of implementation and results, conduct of research designed to produce knowledge regarding effective implementation, provision of staff-development videotapes developed with a grant from the MacArthur Foundation, and preparation of relevant instructional materials for classroom use. With assistance from the NUA and other sources, many schools may be able to bring about future gains in students' comprehension as impressive as those registered at the schools included in this study.

*Information concerning the NUA can be obtained from Dr. Eric Cooper, Vice President, Educational Training and Telecommunications, Simon and Schuster, 250 James Street, Morristown, New Jersey, 07960. -1918, 212-373-7980.

APPENDIX A.1

Glossary of Comprehension-Improvement Strategies*

STRATEGY	DESCRIPTION
ANTICIPATION GUIDES	A series of statements to which students must respond individually before reading text. Students connect their world knowledge to the prediction task. Value lies in discussion that takes place after exercise. Estes and Vaughan, 1985.
CONCEPT MAPPING	See Semantic Mapping, Webbing.
CORNELL NOTE-TAKING	A structured procedure for note-making which has been used by several generations of college students. Taught extensively in college reading and study courses. Pauk, 1989
DRA	A reading lesson; a developmental activity in which provision is made for orientation; silent reading for survey purpose, vocabulary and comprehension development, silent or oral reading, and follow-up. Betts, 1946.
DRTA	The teacher guides students in reading and fosters critical awareness by moving students through a process that involves prediction, verification, judgement, and ultimately extension of thought. Teacher agitates thinking by posing guided and/or reflective questions at different points. Stauffer, 1969.
EVALUATIVE LISTENING DRILL	Through "conferencing" with students via headsets and tape recorders, the teachers evaluates students' tests or essays. The student listens to the critique while examining the graded papers. Teachers frequently withhold the grade until after students hear the comments, in order to ensure that students attend to the critique.
FRAMED PARAGRAPHS	This writing activity involves structuring of a paragraph to be written so that the writer must include the necessary information. The "frame" is the beginning of the sentence provided so that the student completes the sentence using known information. Example. John was _____. The reason I feel this way is _____. In addition _____. Finally _____. Reinforces evaluative thinking, verification of opinion, and persuasion. Adler, 1974; Fowler, 1982.
FRAYER MODEL	A word categorizing activity which develops vocabulary and use of background information, selects a concept to be learned, and asks students to list examples of it. Students then work in groups to organize their lists into categories, discover characteristics common to all examples, and identify nonessential characteristics. Frayer and Klausmeir, 1969.
GRAPHIC ORGANIZERS	A chart which uses content vocabulary to help students anticipate concepts and their relationships to one another in the reading material. Barron, 1969; Hanf, 1971.

STRATEGY	DESCRIPTION
GUIDED READING PROCEDURE	An eight-step procedure designed to gather information and organize it around important ideas. Places a premium on accuracy of recall of text, brainstorming, and organization of information in memory for the long term. Manzo, 1974.
JOURNAL ENTRIES	Students record observations, feelings, events, and other personal learning data at prescribed intervals in an instructional setting. Such journal-writing activity is thought to produce awareness of learning and, thereby, heightened interest and motivation in the context of the study of a subject.
KEYWORD CATEGORIZATION	Pre-reading activity in which a list of key vocabulary words is written in random order on a chalkboard. Students working in groups, make up a scenario telling how the words and terms are related. Then, the students read a text to find out how close they match. Hammond, 1989.
KWL (Know/ Write/Learn	Students first brainstorm a topic to activate background knowledge. After brainstorming and discussion, students note on individual sheets what they feel they know about the topic. (K): Students generate questions before reading which they want to answer during reading. (W): During reading, additional questions can be added to the W column. As students read, they note any information in the (K) column of the worksheet. After reading, students discuss questions and resolve unknowns. Finally, they categorize information. Ogle, 1986.
LIST-GROUP-LABEL	Procedure helps students' vocabulary and categorization skills. Step 1: Teacher writes one-word topic on board; Step 2: Students brainstorm associations to the topic word. About 25 words should be recorded on board; Step 3: Students in small groups construct lists of at least three words from board having something in common. Groups record categories and lists to share with class. Taba, 1967.
PATTERN GUIDES	Helps students identify and use top-level structure in text for better comprehension and retention. Structures include cause-effect, comparision-contrast, time order, enumerations, and problem-solution. Key words "signal" author's use of one or more of these thought relationships in text. Vacca and Vacca, 1986.
POSSIBLE SENTENCES	A four-step procedure. 1) Teacher lists key terms which are adequately defined by their context. Target words are pronounced several times; 2) A student pairs any two words on the list and dictates a sentence using them. Teacher writes sentence on chalkboard. Then process is repeated using other word pairs; 3) Students read passage and check accuracy of sentences generated; 4) After reading and using text, original sentences are revised and corrected. Moore and Arthur, 1981.
PREDICTION	Prediction is a component of several current reading comprehension strategies used by teachers to improve comprehension of textual materials in the content areas. Prediction, really a hypothesis or conjecture, enables the reader to speculate, on the basis of what he or she already knows, what the topic in the text will be about. A prediction may result from a group discussion, or out of a pre-reading discussion. Each individual may make his/her own prediction. Then, the students read the test to confirm or disconfirm the prediction: Analysis of the original prediction and of, what clues might have been used more effectively leads to a new prediction, more reading, and so on.

STRATEGY	DESCRIPTION
PREP (Pre-reading Plan)	An assessment/instructional strategy which may be used diagnostically to estimate levels of background knowledge students bring to text assignments. Step 1: Brainstorm "tell me anything that comes to mind when you hear the word _____"; Step 2: After brainstorm, ask "what made you think of the word _____?"; Step 3: Reformulation of knowledge. "Before we read, based on our discussion, do you have may new ideas about _____?". Langer, 1981.
PYRAMID DIAGRAM	Technique for creating inclusive categories (reduction) for vocabulary term. Words are written on cards backed with magnets. Students group words and give a label for the grouped words. Labels are then made for the names of the groups and so on until a pyramid is formed, the top of which is the most inclusive term, or the category/topic overall. Solon, 1981.
QAR (Questions/ Answer/ Relationship)	Questions students answer are of 3 types as follows: 1) "Right there" questions are textually explicit; 2) "Think and search" are textually implicit questions; 3) "on your own" questions are answered from personal knowledge and background. Pearson and Johnson recommend these kinds of questions to guide comprehension of text. Pearson and Johnson, 1978.
QUESTIONS ONLY	An oral activity in which teacher gives students a topic. Students must learn all they can about topic by asking questions. No information given by teacher unless in response to question. Test will be given after questions have been asked. It is up to students to get information necessary to pass test by skillful questioning. After exercise, students read text with greater background knowledge and higher interest level. Manzo, 1980.
REQUEST	Acronym (i.e. ReQuest) for Reciprocal Questioning. Teacher and student read text silently, one sentence at a time. Teacher and student take turns asking and answering questions about each sentence. Teacher models mature questioning behavior, praises student when questions become more mature. Procedure continues until student can provide reasonable response to question, "What do you think is going to happen in remainder of selections? Why?". Manzo, 1969b.
RETELLING	Students tell and then retell what they recall from reading text. Retelling is a form of recitation, which has been established in research as a major factor in effective learning and retention of textual material.
SELF-GENERATED QUESTIONS	Refers to the process which "expert readers" use to determine whether they are meeting their goals. A means of achieving metacognitive cooperative control over reading. Baker and Brown, 1984.
SEMANTIC FEATURE ANALYSIS	A method of elaborating concept attributes by placing all attributes of a concept on one axis and examples of the concept on another. The task is to determine which examples have which attributes of the concept. Johnson and Pearson, 1984.
SEMANTIC MAPPING	Semantic map has four components: 1) Core question or concept (i.e., focus of map); 2) Strands-subordinate ideas; 3) Strand supports-details 4); strand ties-relationships of strands. Hanf, 1971; Sinatra, 1990.

STRATEGY	DESCRIPTION
SEMANTIC WEBBING	See "Semantic Mapping" (above) and "Webbing" (below). Freedman and Reynolds, 1980; Clewell and Haidemas, 1983; Sinatra, 1990.
SENTENCE SUMMARIES (One-Sentence Summary)	One-sentence summaries are required to: 1) identify the topic or subject of the summary; 2) tell what it begins with; 3) tell what's in the middle; and 4) tell what it ends with. Stanfill, 1977-78.
SQ3R	A study procedure involving the steps: Survey, Question, Read, Recite, Review. Probably the best-known of the study formulas, having, however, poor research validation. Robinson, 1946.
STORY MAP	A story map is a planning tool. It helps teachers analyze the story so that the questions asked during discussion will create a coherent framework for understanding and remembering the text. A story map defines what most stories have in common, i.e., key structural elements such as setting, problem/goal, major events, resolution. Beck, McKeown, McCaslin, and Burket, 1979.
STRIP STORY	Uses any type of paragraph, narrative, or expository text to enhance understanding of sequential order and conceptual logic in a paragraph. Each sentence is cut out and pasted. The student must place strips in logical order. This strategy can be used by individuals or a group.
STRUCTURED OVERVIEW	The teacher arranges a list of pre-selected vocabulary from text into a schema or diagram which depicts key relationships among the terms. Shows diagram to students before reading text. Students and teacher verbalize reasons for diagrammatic arrangement. Helps students learn information and store it in memory in meaningful ways. Herber, 1979; Mavrogenes, 1983.
THINK ALOUD	Think-aloud features the teacher verbalizing thoughts created while reading aloud. The teacher models the kinds of strategies a skilled reader uses during reading, and points out what he/she is doing to cope with a particular comprehension problem. Davey, 1983.
THREE-LEVEL GUIDES	Teacher-made questions to accompany the study of textual material. Working individually or in small groups, students respond to literal, interpretive, and critical/applied questions based on text selection. Herber, 1978.
TIME LINES	A visual display of events along a line, as in history, where specific time relations, antecedent events, and the flow of history can be examined on a linear continuum.
WEBBING	Starting with topic or concept in center, a web of attributes and association is drawn outward, as in a spider web. Clewell and Haidemas, 1983; Sinatra, 1990.